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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/786,442	03/05/2001	Tsuneo Takahashi	99-1043-US	1333

466 7590 07/01/2003

YOUNG & THOMPSON
745 SOUTH 23RD STREET 2ND FLOOR
ARLINGTON, VA 22202

EXAMINER
LANDSMAN, ROBERT S

ART UNIT	PAPER NUMBER
1647	6

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/786,442	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	Robert Landsman	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

P ri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *13-22* is/are withdrawn from consideration.

5)☒ Claim(s) *1,3,4 and 10* is/are allowed.

6)☒ Claim(s) *2,5-9,11,12,23 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Sequence Comparisons A and B* .

DETAILED ACTION

1.Formal Matters

A. Amendment D, filed 4/17/03, has been entered into the record.

B. Amendment C, filed 4/9/03, has been entered into the record.

C. Claims 1-24 are pending and claims 1-12 and 23-24 are the subject of this Office Action.

D. All Statutes under 35 USC not found in this Office Action can be found, cited in full, in a previous Office Action.

2. Specification

A. The objection to the specification has been withdrawn since Applicants have amended the first line of the specification to recite priority to PCT/JP99/04801.

3. Claim Objections

A. All claim objections have been withdrawn in view of Applicants' amendments to the claims. However, new claim objections appear below.

B. Claims 2, 23 and 24 are objected to since claim 2 recites residues 681-726 of SEQ ID NO:2. However, SEQ ID NO:2 is only 337 residues in length.

C. The syntax of claims 11, 12, 23 and 24 could be improved by identifying each step in the method using "(a)," "(b)," etc. as done in claim 10.

4. Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

A. Claims 11, 12, 23 and 24 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by a specific, substantial and credible asserted utility or a well established utility. These claims are directed to methods of screening ligands or inhibitors of ligand binding to the protein of SEQ ID

NO:2. However, the invention encompassed by these claims has no apparent or disclosed patentable utility. This rejection is consistent with the current utility guidelines, published 1/5/01, 66 FR 1092. The instant application has provided a description of an isolated protein. However, the instant application does not disclose a specific and substantial biological role of this protein or its significance.

It is clear from the instant specification that the claimed receptor and polynucleotide have a utility as markers for patients with rheumatoid arthritis. However, the instant application does not disclose the biological role of the claimed protein or its significance, other than as a marker. Simply using this protein to screen for ligands is not predictive of a use of the protein (other than as a marker for RA). There is little doubt that, after complete characterization, this protein will probably be found to have a patentable utility. This further characterization, however, is part of the act of invention and, until it has been undertaken, Applicants' claimed invention is incomplete. Therefore, the instant claims are drawn to screening methods using a protein which has a yet undetermined function or biological significance. There is no actual and specific significance, other than as a marker for RA, which can be attributed to said protein identified in the specification. For this reason, the instant invention is incomplete. In the absence of a knowledge of the natural ligands or biological significance of this protein, there is no immediately obvious patentable use for it other than as a marker. To employ a protein of the instant invention in the identification of substances which bind to and/or mediate activity of the said receptor is clearly to use it as the object of further research which has been determined by the courts to be a non-patentable utility. Since the instant specification does not disclose a "real-world" use for said protein then the claimed invention is incomplete and, therefore, does not meet the requirements of 35 U.S.C. 101 as being useful.

5. Claim Rejections - 35 USC § 112, first paragraph – scope of enablement

A. Claims 11, 12, 23 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to adequately teach how to use the instant invention. Specifically, since the claimed invention is not supported by a specific, substantial and credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

B. The rejection of claims 5-9 under 35 USC 112, first paragraph, has been withdrawn in view of Applicants' amendments to the claims to recite that the derivative is a "chemically modified nucleic acid derivative." Applicants have provided a definition and examples of these derivatives, as seen on page 52, lines 21-24. These derivatives include "methylated," "methyl phosphorylated," "deaminated," or "thiophosphorylated." Applicants provide further support for nucleic acid derivatives by citing Murray et

al. (page 8, left column, lines 36-41). Applicants also argue that 20-mers can be used as probes, primers, or antisense.

C. Furthermore, if claims 11, 12, 23 and 24 were found to have utility, they would still be rejected under 35 U.S.C. 112, first paragraph, because the specification, while then being enabling for screening the full length of SEQ ID NO:2, does not reasonably provide enablement for screening fragments for binding activity. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

In In re Wands, 8USPQ2d, 1400 (CAFC 1988) page 1404, the factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Applicants intend to screen specific peptides of claim 2 to identify ligands which bind, or modulate binding, to these peptides. However, Applicants provide no guidance or working examples of which amino acids are critical for function of the molecule. There are no teachings of what amino acids are required to maintain the activity of any protein other than the full-length protein of SEQ ID NO:2, nor is it predictable to the artisan how to make a functional peptide which is less than the full-length of SEQ ID NO:2 since it is not predictable which residues are critical for function of the molecule. Furthermore, it is not known what "change" is to be measured, especially in light of the fact the binding of a ligand to a peptide does not necessarily imply that a functional change will occur. Regarding claims 12 and 24, there is no disclosure of a known ligand which binds the claimed peptide or protein. Therefore, the artisan would not known what ligand to initially use in order to screen for a substance which inhibits this binding. The Examiner holds that undue experimentation is necessary to practice the claimed invention.

6. Claim Rejections - 35 USC § 112, first paragraph – written description

A. The rejection of claims 5-9 under 35 USC 112, first paragraph, has been withdrawn in view of Applicants' amendments to the claims to recite that the derivative is a "chemically modified nucleic acid derivative." Applicants have provided a definition and examples of these derivatives, as seen on page 52, lines 21-24. These derivatives include "methylated," "methyl phosphorylated," "deaminated," or "thiophosphorylated." Applicants provide further support for nucleic acid derivatives by citing Murray et al. (page 8, left column, lines 36-41).

7. Claim Rejections - 35 USC § 112, second paragraph

A. The rejection of claims 1-4, 8, 10-12, 23 and 24 under 35 USC 112, second paragraph, regarding the term "substantially" has been withdrawn in view of Applicants' amendment to the claims to remove this term.

B. Claims 11-12 and 23-24 recite the limitation "said peptide," and "said protein," respectively. There is insufficient antecedent basis for this limitation in the claim.

C. Claims 11, 12, 23 and 24 are confusing since the metes and bounds of "change" are not known especially in view of the fact that ligand binding to a receptor does not imply that a functional change must occur.

8. Claim Rejections - 35 USC § 102

A. All rejections under 35 USC 102 have been withdrawn in view of Applicants' amendments to the claims to recite the specific residues in claim 2 and to recite that the isolated nucleic acid molecules are at least 20 contiguous bases in length. Neither Li et al., nor Alvarez et al. teach these limitations. However, new rejections under 35 USC 102 appear below.

B. Claims 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Lamerdin et al. The claims recite an isolated DNA or RNA comprising at least 20 contiguous bases of SEQ ID NO:3. Lanerdin et al. teach a polynucleotide encoding 27 contiguous bases of SEQ ID NO:3 (Sequence Comparison A). The artisan would immediately envision the RNA sequence based on the DNA sequence of Lamerdin et al.

C. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Partanen et al. The claim recites an isolated DNA comprising at least 20 contiguous bases of SEQ ID NO:4. Partanen et al. teach a polynucleotide encoding 24 contiguous bases of SEQ ID NO:4 (Sequence Comparison B).

9. Claim Rejections - 35 USC § 103

A. The rejection of claims 8-10 under 35 USC 103 as being unpatentable over Alvarez et al. in view of Sibson et al. has been withdrawn in view of Applicants' amendment to recite that the DNA of the present invention is at least 20 contiguous bases, a limitation which is not met by neither Alvarez et al., nor Sibson et al. However, a new rejection under 35 USC 103 appears below.

B. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Lanerdin or Partanen each in view of Sibson et al. (WO 94/01548). The claims are drawn to expression vectors and host cells. The teachings of both Lamerdin and Partanen are seen in the above rejection under 35 USC 102. Neither Lanerdin nor Partanen teach expression vectors or host cells. However, Sibson et al. do teach expression vectors and host cells (page 7, line 39 – page 9, line 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the invention of Sibson et al. by substituting a cDNA in the polycloning region of the vector with the polynucleotide (cDNA) of either Lamerdin or Partanen for the purpose of transfecting a host cell as taught by Sibson et al. in view of Sibson et al.'s suggestion that it would be desirable to do so (pages 8-13). One of ordinary skill in the art would have been motivated to make this substitution in order to express the protein encoded by the introduced DNA in a host cell to perform ligand binding and functional assays. There would have been a reasonable expectation of success for a person of ordinary skill in the art to make this invention since these techniques are widely used in the art and are highly successful (Sibson et al., page 10, line 38 – page 12, line 42). The present invention, therefore, is *prima facia* obvious over the above references in the absence of evidence to the contrary.

10. Conclusion

A. Claims 1, 3, 4 and 10 are allowable.

Advisory information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Landsman whose telephone number is (703) 306-3407. The examiner can normally be reached on Monday - Friday from 8:00 AM to 5:00 PM (Eastern time) and alternate Fridays from 8:00 AM to 5:00 PM (Eastern time).

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Gary Kunz, can be reached on (703) 308-4623.

Official papers filed by fax should be directed to (703) 308-4242. Fax draft or informal communications with the examiner should be directed to (703) 308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Robert Landsman, Ph.D.
Patent Examiner
Group 1600
June 27, 2003

ROBERT LANDSMAN
PATENT EXAMINER

Sequence Comparison A

```
US-08-458-970A-9
; Sequence 9, Application US/08458970A
; Patent No. 5861272
;  GENERAL INFORMATION:
;    APPLICANT:  LI, ET AL.
;    TITLE OF INVENTION:  C5a Receptor
;    NUMBER OF SEQUENCES:  11
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  CARELLA, BYRNE, BAIN, GILFILLAN,
;      ADDRESSEE:  CECCHI, STEWART & OLSTEIN
;      STREET:  6 BECKER FARM ROAD
;      CITY:  ROSELAND
;      STATE:  NEW JERSEY
;      COUNTRY:  USA
;      ZIP:  07068
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  3.5 INCH DISKETTE
;      COMPUTER:  IBM PS/2
;      OPERATING SYSTEM:  MS-DOS
;      SOFTWARE:  WORD PERFECT 5.1
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/458,970A
;      FILING DATE:  June 2, 1995
;      CLASSIFICATION:  536
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  PCT/US94/09234
;      FILING DATE:  16 AUG 1994
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  MULLINS, J.G.
;      REGISTRATION NUMBER:  33,073
;      REFERENCE/DOCKET NUMBER:  325800-353
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  201-994-1700
;      TELEFAX:  201-994-1744
;  INFORMATION FOR SEQ ID NO:  9:
;    SEQUENCE CHARACTERISTICS:

;      LENGTH:  350 amino acids
;      TYPE:  amino acid
;      STRANDEDNESS:
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-458-970A-9

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  Best Local Similarity  38.4%;  Pred. No. 1.5e-38;
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Qy     290 LFLYFG---RAQLRRSLPAACHWALRESQGQDESVDSKKST 327
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SEQ ID NO:3 Sequence Comparison B

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DEFINITION  G.gorilla DNA for C5a receptor fragment.
ACCESSION   X97733
VERSION     X97733.1  GI:1731974
KEYWORDS    C5a receptor; C5aR gene.
SOURCE      gorilla.
  ORGANISM  Gorilla gorilla
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Gorilla.
REFERENCE   1  (bases 1 to 1023)
  AUTHORS   Alvarez,V., Coto,E., Setien,F., Gonzalez-Roces,S. and
            Lopez-Larrea,C.
  TITLE     Molecular evolution of the N-formyl peptide and C5a receptors in
            non-human primates
  JOURNAL   Immunogenetics 44 (6), 446-452 (1996)
  MEDLINE   96421539
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   PUBMED   8824156
REFERENCE   2  (bases 1 to 1023)
  AUTHORS   Alvarez,V.
  TITLE     Direct Submission
  JOURNAL   Submitted (29-APR-1996) V. Alvarez, Inmunologia, Hospital Centra
de
            Asturias, Celestino Villamil, s/n 33006 Oviedo, SPAIN
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  Matches   499;  Conservative     0;  Mismatches   364;  Indels    21;  Gaps
1;

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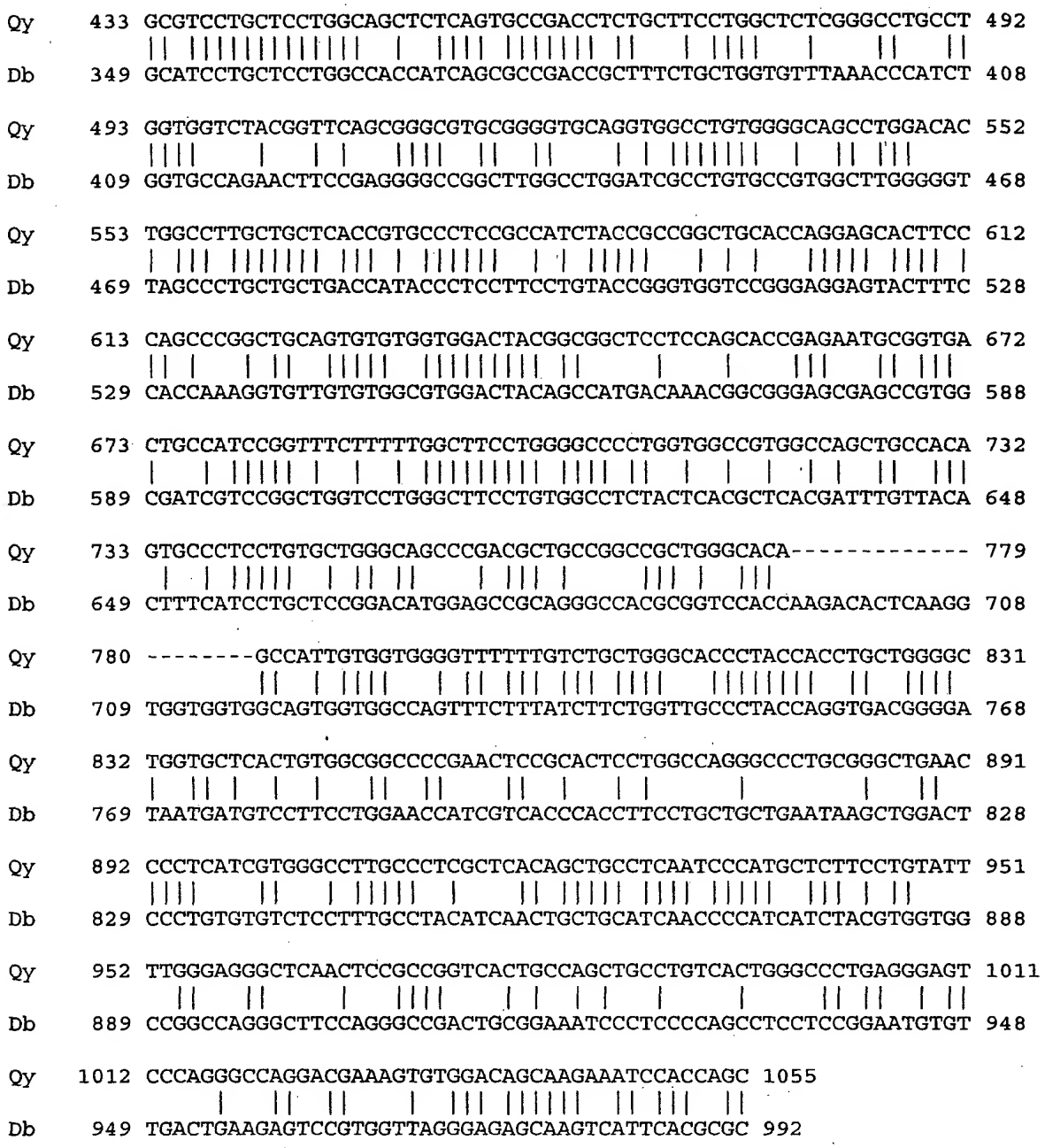

SEQ ID NO:4 Sequence Comparison C

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DEFINITION  G.gorilla DNA for C5a receptor fragment.
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VERSION     X97733.1  GI:1731974
KEYWORDS    C5a receptor; C5aR gene.
SOURCE      gorilla.
  ORGANISM  Gorilla gorilla
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata;
Euteleostomi;
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            Mammalia; Eutheria; Primates; Catarrhini; Hominidae;
Gorilla.
REFERENCE   1  (bases 1 to 1023)
  AUTHORS   Alvarez,V., Coto,E., Setien,F., Gonzalez-Roces,S. and
            Lopez-Larrea,C.
  TITLE     Molecular evolution of the N-formyl peptide and C5a
receptors in
            non-human primates
  JOURNAL   Immunogenetics 44 (6), 446-452 (1996)
  MEDLINE   96421539
   PUBMED   8824156
REFERENCE   2  (bases 1 to 1023)
  AUTHORS   Alvarez,V.
  TITLE     Direct Submission
  JOURNAL   Submitted (29-APR-1996) V. Alvarez, Inmunologia, Hospital
Centra de
            Asturias, Celestino Villamil, s/n 33006 Oviedo, SPAIN
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LCVSFAYINCCINPIIYVVAGQGFQGRLRKSLPSLLRNVLTEESVVRESKSFTRSTVD
                    TMAQKT"
BASE COUNT      177 a    328 c    276 g    242 t
ORIGIN

  Query Match             19.4%;  Score 249.6;  DB 9;  Length 1023;
  Best Local Similarity   56.4%;  Pred. No. 2.4e-36;
  Matches   499;  Conservative     0;  Mismatches   364;  Indels    21;  Gaps
1;

Qy     233 GCTGGTGGATTTCTTGCTGTCCACACTTTCGTCCTGGCCCTGGGACTCCCTCAGGGCCCA 292
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Db     992 GCGCGTGAATGACTTGCTCTCCCTAACCACGGACTCTTCAGTCAACACATTCCGGAGGAG 933

Qy     293 GTGACAGGCAGCTGGCAGTGACCGGCGGAGTTGAGCCCTCCCAAAATACAGGAAGAGCAT 352
           |     |   | |  | |    ||||   |     ||   ||       || | |||  ||
Db     932 GCTGGGGAGGGATTTCCGCAGTCGGCCCTGGAAGCCCTGGCCGGCCACCACGTAGATGAT 873
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